two specimens brought home about two years ago were from Northern Mashonaland. Thus this animal, until lately supposed to be quite extinct, has now been found in a second locality. But these are now the only two spots on the face of the earth where this huge creature, formerly abundant in the Cape Colony, still exists, in very dwindling numbers, which will, no doubt, be now rapidly diminished.

A COMMITTEE of six gentlemen has been appointed by the Governor-General of Goa, India, to carry on excavations in the ancient city of Goa, in rearch of relics of the traditional grandeur of the past, and to take the necessary steps for the preservation of the monuments of Portuguese rule in India in the earlier time.

AN electrical forge, where the whole of the heating required is done by electricity, is in operation at Niagara Falls, the power being supplied by the great cataract. The cost of making a horse-shoe at the electric forge is, it is stated, much less than at an ordinary coal forge. We hear, too, that corn is being threshed by electricity, with very satisfactory results, at Mjölby in Sweden.

WE have received from Mr. W. Radcliffe, of Andreas School, Isle of Man, the inventor of the "Gonagraph," an instrument for drawing perfectly accurate equilateral triangles, squares, pentagons, hexagons, heptagons and octagons, an arithmetical puzzle. The puzzle consists of nineteen small cubes, having a face on each numbered with one of the first nineteen numbers, which are to be placed upon squares, symmetrically arranged on a board, five on the middle row, and two rows of four and three squares to right and left of this. The numbers are to be so arranged that their sum along each of twelve straight lines shall make up thirty-eight. This sum is also obtainable from other symmetrical arangements. It will thus be seen that the puzzle is of the nature of a magic square, and is a very ingenious one. The author has favoured us with his solution, which naturally is at present kept back. He has not furnished us with a clue to his arrangement, and we have in vain searched for it; nor does he say whether he has attempted any extension of the puzzle to thirty-seven or a higher number of cubes. The "thirty-eight" puzzle can be obtained direct from the inventor in a small box for sixpence.

A DESCRIPTION has been sent to us of a new arc lamp for projection purposes, which has been devised by Mr. Cecil M. Hepworth. The instrument has three regulating discs or milled heads of vulcanite, which project at the back, so as to be under the control of the lanternist. The top and bottom discs are for the purpose of regulating the positions of the carbons, and the middle disc has three duties to perform, viz. to bring the carbons slowly together as their points waste in consumption, by a push action to cause the carbons instantaneously to touch, and by a spring to as quickly separate, while by an upward movement the worm-wheel is thrown completely out of gear, and the carbons can be rapidly separated or brought together by hand, a provision necessary for the saving of time when inserting new carbons.

THE September part of the *Proceedings* of the Physical Society of London has reached us, and contains, in addition to the usual valuable supplement of "Abstracts of Physical Papers from Foreign Sources," the following papers:—"A Theory of the Synchronous Motor," by W. G. Rhodes (continuation); "On the Use of an Iodine Voltameter for the Measurement of Small Currents," by Prof. E. F. Herroun, "On the Condensation and the Critical Phenomena of Mixtures of Ethane and Nitrous Oxide," by Dr. Kuenen; "An Electro-Magnetic Effect," by F. W. Bowden; and "The Electrical Properties of Selenium," by Shelford Bidwell, F.R.S.

THE September–October part of the *Physical Review* (Macmillan) contains the following articles: "A Study of the Polarisation of the Light emitted by Incandescent Solid and Liquid Surfaces," by R. A. Millikan, "Alternating Currents when the Electromotive Force is of a Zigzag Wave Type," by E. C. Rimmington, "On Ternary Mixtures," by W. D. Bancroft, part 2; and minor contributions.

BOURNE'S Handy Assurance Manual for 1895, by William Schooling, has been published. It contains in a small compass a whole host of information likely to be of use to those who are interested in insurance matters, and appears to have been compiled with great care.

WE have received from Messrs. G. W. Wilson and Co., Limited, 2 St. Swithin Street, Aberdeen, copies of their catalogues of lantern slides. The list of subjects illustrated is a very full one, and the catalogues may be had upon application.

ON the completion of the fiftieth year of its existence, the editor of the *Botanische Zeitung* publishes a very useful index of the papers contained in the first fifty volumes.

THE September number of the *Irish Naturalist* has just appeared, and is entirely devoted to reports of the Galway conference and excursion of the Irish Field Club Union, held in July.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♀) from India, presented by Miss Larkin; a Macaque Monkey (*Macacus cynomolgus*, ♂) from India, presented by Mr. W. Aldridge; a Purple-faced Monkey (*Semnopithecus leucoprymnus*) from Ceylon, presented by Mrs. Griffith; a —— Monkey (*Cercopithecus*, sp. inc.) from Africa, presented by Miss Pigott; two Vulpine Phalangers (*Phalangista vulpina*, ♂ ♀) from Australia, presented by Mr. F. J. Horniman; a Magpie (*Pica caudata*), British, presented by Mr. H. E. Blandford; an Orange-cheeked Amazon (*Chrysotis autumnalis*) from Central America, presented by the Rev. W. J. Loftie; a Martinique (*Ionornis martinicus*), captured off the Island of Ascension, presented by Mr. H. W. Power; a Smooth Snake (*Coronella lævis*), a Common Viper (*Vipera berus*), British, presented by Mr. G. J. S. Warner; a Brown Capuchin (*Cebus fatuellus*) from Guiana, three Grant's Francolines (*Francolinus granti*) from East Africa, two Egyptian Trionyx (*Trionyx niloticus*) from the Congo, deposited; a Two-toed Sloth (*Cholopus didactylus*) from Brazil, a Yellow-naped Amazon (*Chrysotis auripalliata*) from Central America, purchased.

OUR ASTRONOMICAL COLUMN.

THE ORBIT OF μ^2 BOOTIS (Σ 1938).—Dr. T. J. J. See gives in the *Astr. Nach.*, No. 3309, Bd. 138, the results of his researches on this star. This double was discovered by Sir William Herschel in 1781, and since the time of Struve it has been very abundantly observed. In all parts of the orbit the pair is sufficiently wide to be seen with a 6-inch telescope. The investigation gives the following elements of μ Bootis; other elements are given for comparison.

	P	T	*e*	*a*	Ω	*i*	λ	Authority
				″	°	°	°	
1	146·649	1851·57	0·8529	1·320	94·7	49·4	87·1	Mädler 1847
2	182·6	66·0	0·491	1·165	166·1	47·5	23·0	Winagradsky 1872
3	314·34	60·88	0·5641	1·761	163·2	41·9	54·4	Hind 1872
4	200·4	65·2	0·51	—	172·0	45·0	20·1	Wilson 1872
5	198·93	65·5	0·4957	—	169·0	46·4	23·6	Klinkerfues
6	290·07	63·51	0·6174	1·500	183·0	44·4	17·7	Doberck 1875
7	280·29	60·51	0·5974	1·47	173·7	39·9	20·0	Doberck 1878
8	266·0	62·55	0·5668	1·057	166·7	35·2	40·9	Pritchard 1878
9	219·42	65·30	0·537	1·268	163·8	43·9	329·75	See 1895

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The apparent orbit is :

Major axis = $2''\cdot656$
Minor axis = $1''\cdot480$
Angle of major axis = $173^\circ\cdot5$
,, ,, periastron = $186^\circ\cdot7$
Distance of star from centre = $0''\cdot638$

The computed and observed places seem to justify the new elements given above. The period thus will hardly be varied by as much as ten years, while the resulting alteration will be small in proportion.

THE BRITISH ASSOCIATION.

SECTION K.

BOTANY.

OPENING ADDRESS BY W. T. THISELTON-DYER, M.A., F.R.S., C.M.G., C.I.E., DIRECTOR OF THE ROYAL GARDENS.

THE establishment of a new Section of the British Association, devoted to Botany, cannot but be regarded by the botanists of this country as an event of the greatest importance. For it is practically the first time that they have possessed an independent organisation of their own. It is true that for some years past we have generally been strong enough to form a separate department of the old Biological Section D, on the platform of which so many of us in the past have acted in some capacity or other, and on which indeed many of us may be said to have made our first appearance. We shall not start then on our new career without the remembrance of filial affection for our parent, and the earnest hope that our work may be worthy of its great traditions.

The first meeting of the Section, or, as it was then called, Committee, at Oxford was held in 1832. And though there has been from time to time some difference in the grouping of the several biological sciences, the two great branches of biology have only now for the first time formally severed the partnership into which they entered on that occasion. That this severance, if inevitable from force of circumstances, is in some respects a matter of regret, I do not deny. Specialisation is inseparable from scientific progress; but it will defeat its own end in biology if the specialist does not constantly keep in touch with those fundamental principles which are common to all organic nature. We shall have to take care that we do not drift into a position of isolation. Section D undoubtedly afforded a convenient opportunity for discussing many questions on which it was of great advantage that workers in the two different fields should compare their results and views. But I hope that by means of occasional conferences we shall still, in some measure, be able to preserve this advantage.

RETROSPECT.

I confess I found it a great temptation to review, however imperfectly, the history and fortunes of our subject while it belonged to Section D. But to have done so would have been practically to have written the history of botany in this country since the first third of the century. Yet I cannot pass over some few striking events.

I think that the earliest of these must undoubtedly be regarded as the most epoch-making. I mean the formal publication by the Linnean Society, in 1833, of the first description of "the nucleus of the cell," by Robert Brown ("Misc. Bot. Works," i. 512). It seems difficult to realise that this may be within the recollection of some who are now living amongst us. It is, however, of peculiar interest to me that the first person who actually distinguished this all-important body, and indicated it in a figure, was Francis Bauer, thirty years earlier, in 1802. This remarkable man, whose skill in applying the resources of art to the illustration of plant anatomy has never, I suppose been surpassed, was "resident draughtsman for fifty years to the Royal Botanic Garden at Kew." And it was at Kew, and in a tropical orchid, *Phaius grandifolius*, no doubt grown there, that the discovery was made.

It was, I confess, with no little admiration that, on refreshing my memory by a reference to Robert Brown's paper, I read again the vivid account which he gives in a footnote of the phenomena, so painfully familiar to many of us who have been teachers, exhibited in the staminal hair of *Tradescantia*. Sir Joseph Hooker (*Proc. Linn. Soc.*, 1887–88, 65) has well remarked that "the supreme importance of this observation, . . . leading to undreamt-of conceptions of the fundamental phenomena of organic life, is acknowledged by all investigators." It is singular that so profound an observer as Robert Brown should have himself missed the significance of what he saw. The world had to wait for the discovery of protoplasm by Von Mohl till 1846, and till 1850 for its identification with the sarcode of zoologists by Cohn, who is still, I am happy to say, living and at work, and to whom last year the Linnean Society did itself the honour of presenting its medal.

The Edinburgh meeting of the Association, in 1834, was the occasion of the announcement of another memorable discovery of Robert Brown's. I will content myself with quoting Hofmeister's ("Higher Cryptogamia," 432) account of it. "Robert Brown was the discoverer of the polyembryony of the *Coniferæ*. In a later treatise he pointed out the origin of the pro-embryo in large cells of the endosperm, to which he gave the name of corpscula." The period of the forties, just half a century ago, looks in the retrospect as one of almost dazzling discovery. To say nothing of the formal appearance of protoplasm on the scene, the foundations were being laid in all directions of our modern botanical morphology. Yet its contemporaries viewed it with a very philosophical calm. Thwaites, who regarded Carpenter as his master, described at the Oxford meeting in 1847 the conjugation of the *Diatomaceæ*, and "distinctly indicated," as Carpenter ("Memorial Sketch," 140) says, "that conjugation is the primitive phase of sexual reproduction." Berkeley informed me that the announcement fell perfectly flat. A year or two later Suminski came to London with his splendid discovery (1848) of the archegonia of the fern, the antheridia having been first seen by Nägeli in 1844. Carpenter (*loc. cit.*, 141) gave me, many years after, a curious account of its reception. "At the Council of the Ray Society, at which," he said, "I advocated the reproduction of Suminski's book on the 'Ferns,' I was assured that the close resemblance of the antherozoids to spermatozoa was quite sufficient proof that they could have nothing to do with vegetable reproduction. I do not think," he added—and the complaint is pathetic—"that the men of the present generation, who have been brought up in the *light*, quite apprehend (in this as in other matters) the utter darkness in which we were then groping, or fully recognise the deserts of those who helped them to what they now enjoy." This was in 1875, and I suppose is not likely to be less true now.

The Oxford meeting in 1860 was the scene of the memorable debate on the origin of species, at which it is interesting to remember that Henslow presided. On that occasion Section D reached its meridian. The battle was Homeric. However little to the taste of its author, the launching of his great theory was, at any rate, dignified with a not inconsiderable explosion. It may be that it is not given to the men of our day to ruffle the dull level of public placidity with disturbing and far-reaching ideas. But if it were, I doubt whether we have, or need now, the fierce energy which inspired then either the attack or the defence. When we met again in Oxford last year the champion of the old conflict stood in the place of honour, acclaimed of all men, a beautiful and venerable figure. We did not know then that that was to be his farewell.

The battle was not in vain. Six years afterwards, at Nottingham, Sir Joseph Hooker delivered his classical lecture on Insular Floras. It implicitly accepted the new doctrine, and applied it with admirable effect to a field which had long waited for an illuminating principle. The lecture itself has since remained one of the corner-stones of that rational theory of the geographical distribution of plants which may, I think, be claimed fairly as of purely English origin.

HENSLOW.

Addressing you as I do at Ipswich, there is one name written in the annals of our old Section which I cannot pass over—that of Henslow. He was the Secretary of the Biological Section at its first meeting in 1832, and its President at Bristol in 1836. I suppose there are few men of this century who have indirectly more influenced the current of human thought. For in great measure I think it will not be contested that we owe Darwin to him. As Romanes has told us ("Memorial Notices," 13): "His letters written to Prof. Henslow during his voyage round the world overflow with feelings of affection, veneration, and obligation to his accomplished master and dearest friend—feelings which throughout his life he retained with no diminished intensity. As he used himself to say, before he knew Prof.

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